



166 South Carter, Genoa City, WI 53128

Company:
Model Tested:
Certification Exhibit:

California Eastern Laboratories
Gemini P0X1A
RF Exposure

FCC Code of Federal Regulations 47 Part 1.1307(b) (1)

RF Exposure Statement of Compliance

THE FOLLOWING **MEETS** THE ABOVE TEST SPECIFICATION

Formal Name:	MeshConnect ZICM357SP0-1 Zigbee Module
Kind of Equipment:	802.15.4 Wireless Module
Frequency Range:	2405-2480 MHz
Test Configuration:	DC powered transceiver module
Model Number(s):	ZICM357SP0-1 Rev X1a
Model(s) Tested:	ZICM357SP0 Rev X1a
Serial Number(s):	Radiated: EMC1; RF Conducted: EMC3
Date of Tests:	March 26 through March 29, 2012
Test Conducted For:	California Eastern Laboratories 1253 N. Old Rand Road Wauconda, Illinois 60084, USA



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Transmitter Information:

Maximum Conducted Output Power:	8.21 dBm (6.62 mW)
Maximum Effective Isotropic Radiated Power	9.14 dBm
Frequency:	2440 MHz
Antenna Type:	PCB Trace Antenna
Antenna Gain:	0.93 dBi

Exposure Limit:

Maximum Permissible Exposure (MPE) limit for General Population / Uncontrolled Exposure in the frequency range 1500 – 100,000 MHz (ref: 47 CFR Part 1.1310 Table 1(b))

Limit: $(S) \text{ (mW/cm}^2\text{)} = 1.0 \text{ mW/cm}^2$

MPE Calculation:

Power Density $\text{(mW/cm}^2\text{)}$:

$$S = \frac{PG}{4\pi R^2}$$

S = Power Density $\text{(mW/cm}^2\text{)}$

P = Power Input to the antenna (mW)

G = Numeric Power Gain of the antenna

R = Distance to the center of the radiation of the antenna (cm)



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Results:

P =	8.21	dBm						
G =	0.93	dBi						
R =	20	cm						
π	3.14159							
Transmit Frequency (MHz)	Output Power (dBm)	Output Power (mW)	Antenna Gain (dBi)	Antenna Gain	Distance (cm)	Power Density (mW/cm ²)	Power Density Limit (mW/cm ²)	Margin
2440	8.21	6.62217	0.93	1.23880	20	0.0016	1.0	0.998

Summary of Results:

With a minimum separation distance of 20 centimeters as defined by FCC 2.1091(b), for a mobile device, the California Eastern Laboratories MeshConnect ZICM357SP0-1 Zigbee Module **meets** the RF exposure evaluation requirements for maximum permissible exposure to any radiating structure and the general population / uncontrolled exposure.

Conclusion:

The California Eastern Laboratories MeshConnect ZICM357SP0-1 Zigbee Module operating under FCC part 15.247 complies with the requirements of FCC Part 1.1307(b)(1) for RF Exposure Evaluation.

Supporting data to follow...



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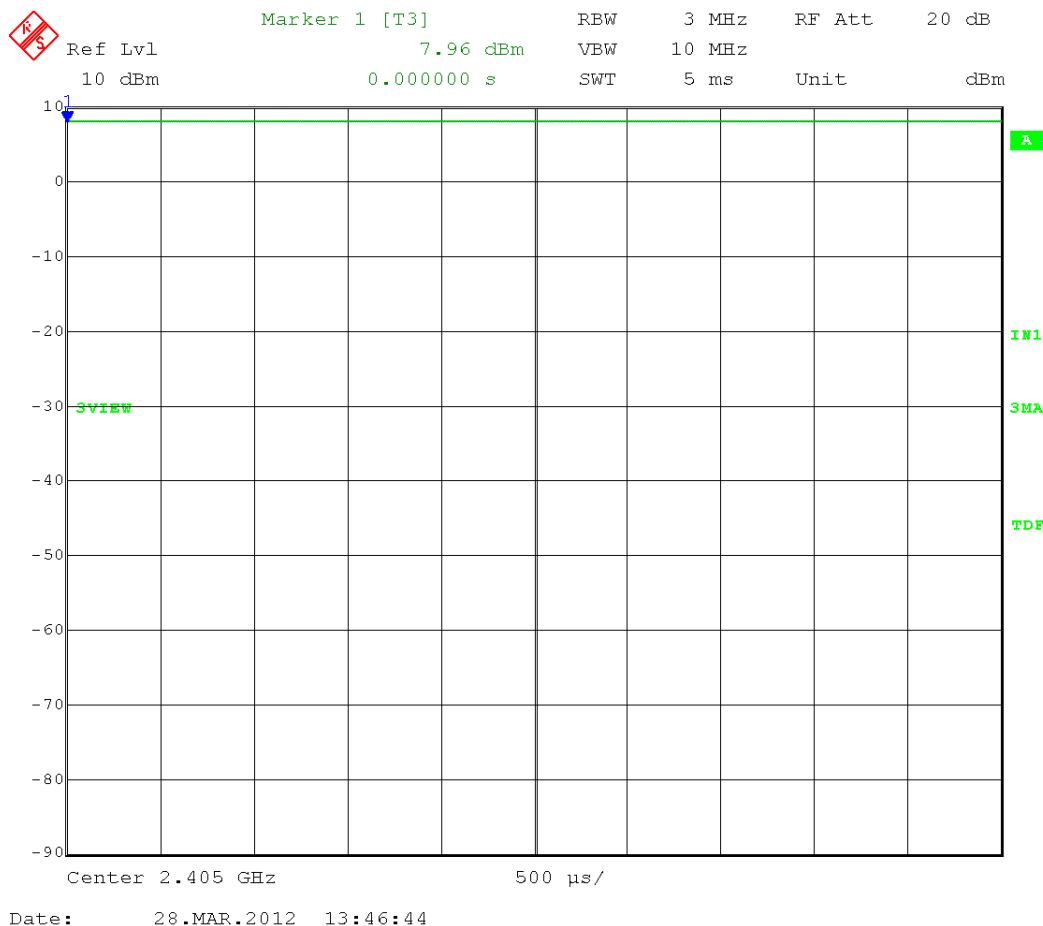
166 South Carter, Genoa City, WI 53128

Test Date: 03-28-2012
Company: California Eastern Laboratories
EUT: Gemini P0X1A
Test: Fundamental Emission Output Power - Conducted
Operator: Craig B

Comment: RBW \geq EBW
VBW \geq 3 x RBW
Span = zero
Sweep = auto couple
Detector = Peak
Trace = max hold

Comment: Low Channel: Frequency – 2.405 GHz
Output power setting 8

Fundamental Emission Output Power = 7.96 dBm = **6.25 mW**





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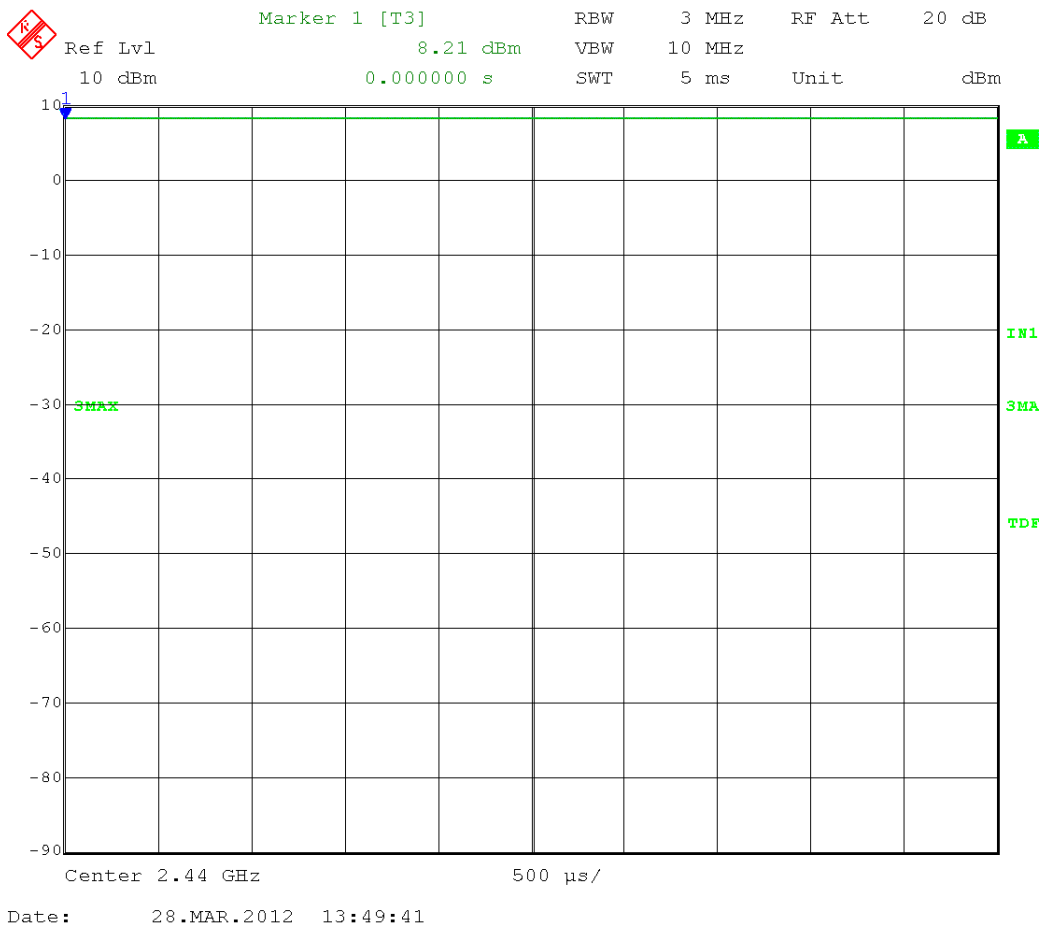
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Test Date: 03-28-2012
Company: California Eastern Laboratories
EUT: Gemini P0X1A
Test: Fundamental Emission Output Power - Conducted
Operator: Craig B

Comment: RBW \geq EBW
VBW \geq 3 x RBW
Span = zero
Sweep = auto couple
Detector = Peak
Trace = max hold

Comment: Middle Channel: Frequency – 2.440 GHz
Output power setting 8

Fundamental Emission Output Power = 8.21 dBm = 6.62 mW





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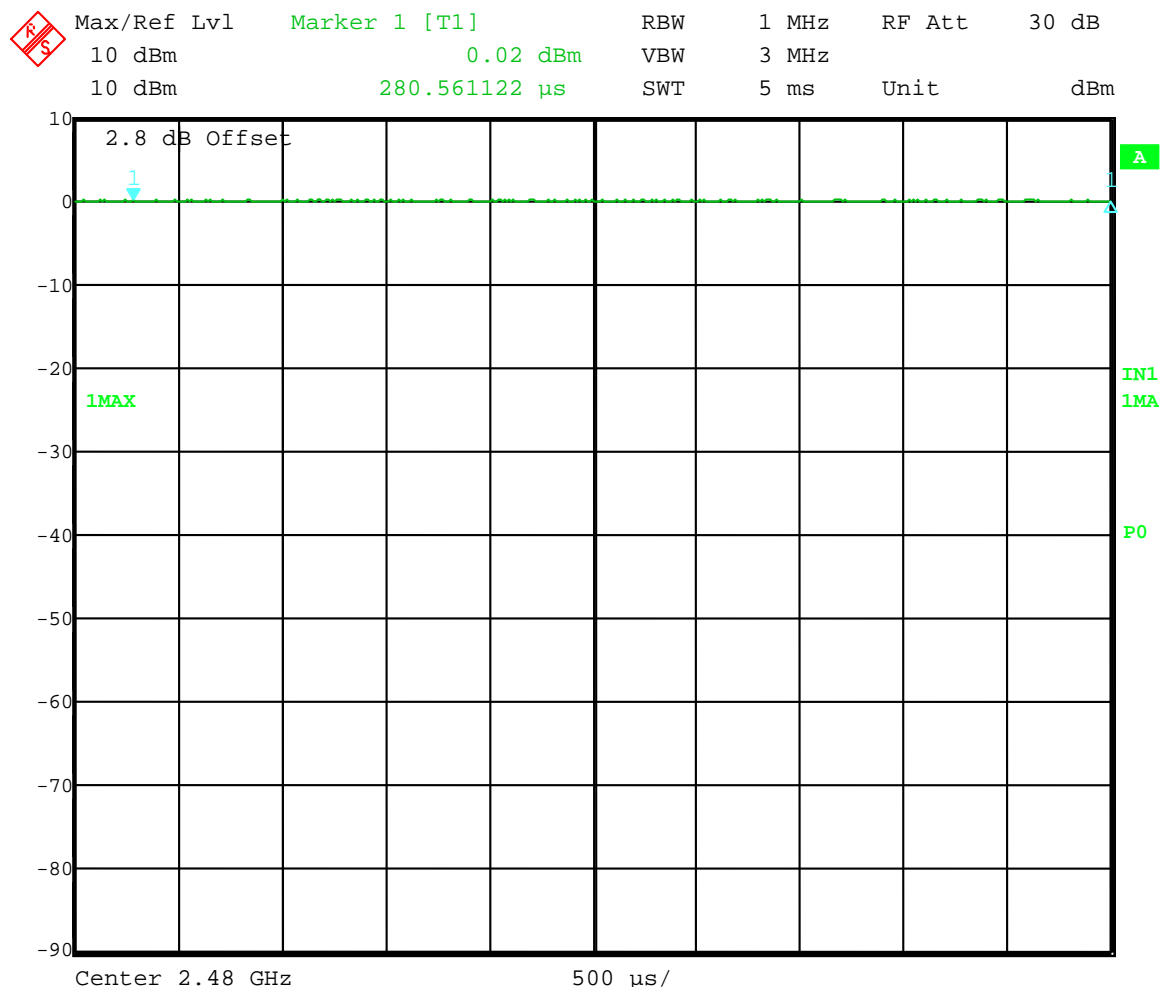
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Test Date: 04-09-2012
Company: California Eastern Laboratories
EUT: Gemini P0X1A
Test: Fundamental Emission Output Power - Conducted
Operator: Cooper L.

Comment: RBW \geq EBW Sweep = auto couple
VBW \geq 3 x RBW Detector = Peak
Span = zero Trace = max hold

Comment: High Channel: Frequency – 2.480 GHz
Output power setting 0

Fundamental Emission Output Power = 0.0 dBm = **1.0 mW**



Date: 9.APR.2012 13:43:36

DLS Electronic Systems, Inc.

Company: California Eastern Laboratories

Operator: Craig B

Date of test: 03-27-2012

Temperature: 70 deg. F

Humidity: 44% R.H.

RBW: 3 MHz

VBW: 10 MHz

Span = zero

Detector: Peak

Trace mode: max hold

EIRP - Substitution Method

Model: Gemini P0X1A								
Channel: Low; 2405 MHz; Output power setting 8								
Frequency and Polarization (MHz)	Max. Field Strength of EUT @ 3 meters (dBuV/m)	Output of Signal Generator when field strength equals that of EUT (dBm)	Correction factor for cable between Signal Gen. and subst. antenna (dB)	Gain of subst. antenna (dBi)	Strength of emission [EIRP] (dBm)	Limit (dBm)	Margin (dB)	Strength of emission [EIRP] (mW)
2405 Vertical	106.76	2.24	2.75	9.28	8.77			
2405 Horizontal	106.62	1.99	2.75	9.28	8.52			

EIRP = Signal generator output - cable loss + antenna gain

DLS Electronic Systems, Inc.

Company: California Eastern Laboratores

Operator: Craig B

Date of test: 03-27-2012

Temperature: 70 deg. F

Humidity: 44% R.H.

RBW: 3 MHz

VBW: 10 MHz

Span = zero

Detector: Peak

Trace mode: max hold

EIRP - Substitution Method

Model: Gemini P0X1A								
Channel: Mid; 2440 MHz; Output power setting 8								
Frequency and Polarization (MHz)	Max. Field Strength of EUT @ 3 meters (dBuV/m)	Output of Signal Generator when field strength equals that of EUT (dBm)	Correction factor for cable between Signal Gen. and subst. antenna (dB)	Gain of subst. antenna (dBi)	Strength of emission [EIRP] (dBm)	Limit (dBm)	Margin (dB)	Strength of emission [EIRP] (mW)
2440 Vertical	107.05	2.61	2.78	9.31	9.14			
2440 Horizontal	106.78	2.34	2.78	9.31	8.87			

EIRP = Signal generator output - cable loss + antenna gain

DLS Electronic Systems, Inc.

Company: California Eastern Laboratores

Operator: Cooper L

Date of test: 04-09-2012

Temperature: 70 deg. F

Humidity: 44% R.H.

RBW: 3 MHz

VBW: 10 MHz

Span = zero

Detector: Peak

Trace mode: max hold

EIRP - Substitution Method

Model: Gemini P0X1A								
Channel: High; 2480 MHz; Output power setting 0								
Frequency and Polarization (MHz)	Max. Field Strength of EUT @ 3 meters (dBuV/m)	Output of Signal Generator when field strength equals that of EUT (dBm)	Correction factor for cable between Signal Gen. and subst. antenna (dB)	Gain of subst. antenna (dBi)	Strength of emission [EIRP] (dBm)	Limit (dBm)	Margin (dB)	Strength of emission [EIRP] (mW)
2480 Vertical	98.98	-5.55	2.81	9.35	0.99			
2480 Horizontal	98.71	-5.82	2.81	9.35	0.72			

EIRP = Signal generator output - cable loss + antenna gain